

Remarks

Claims 1 has been amended. Claim 7 has been cancelled. Claims 8-26 have been withdrawn. Claims 1-6 remain pending in the present application. Reexamination and reconsideration of the claims, in view of the discussion below, are respectfully requested.

The examiner objected to claims 1-7 for various informalities. The claims have been amended in accordance with the examiner's suggestions.

The examiner rejected claims 1-7 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention. Claims 1, 3, and 4 have been amended in order to overcome these rejections.

The examiner rejected claims 1-7 under 35 U.S.C. 102(b) as being anticipated by Stockmann et al. (U.S. Patent No. 6,253,574), and also claims 1 and 5-7 and being anticipated by Dubar (U.S. Patent No. 4,539,028).

Stockmann et al. relates to a method for liquefying a stream rich in hydrocarbons, especially a stream of natural gas, by the indirect exchange of heat with the refrigerants in a closed-circuit cascade of mixed refrigerants. According to the disclosure, said closed-circuit cascade of mixed refrigerants consists of at least three circuits of mixed refrigerants, with each circuit comprising different refrigerants. The first of the three mixed refrigerant circuits is used for pre-cooling (E1), the second for liquefying (E2), and the third for super-cooling (E3) the hydrocarbon-rich stream (1) to be liquefied.

As can be seen from Figure 1 in Stockmann et al., a first refrigerant circuit P1-P16 serves to cool the stream in the pre-cooling circuit heat exchanger (E1) only. Similarly, a second

refrigerant circuit L1-L12 serves to cool the stream in the pre-cooling circuit heat exchanger (E1) and the liquefaction circuit heat exchanger (E2). Both circuits are provided with expansion valves (P13/P15; L9/L11) and flash/storage tanks (P11; L7) for separating and storing gas and liquid. This arrangement allows for subsequent regulation of the gas/liquid distribution through the respective heat exchangers (E1, E2) and for regulation of the liquid level in the respective flash/storage tanks (P11; L7). This arrangement is described in Stockmann et al. at col. 4, line 63 through col. 5, line 26.

What can also be seen from Stockmann et al. is that once the refrigerant in the second circuit (see L5, L6) has passed through the pre-cooling circuit heat exchanger (E1), the second circuit passes directly to the liquefaction circuit heat exchanger (E2), and there is no further interaction between the refrigerant in the second circuit and the pre-cooling circuit heat exchanger (E1).

Dubar has the same characteristics described above for Stockmann et al.

The present invention differs from Stockmann et al. and Dubar in that the second circuit (3a-3e) is split after passing through the pre-cooling circuit heat exchanger (E1). One branch (3b) carries on through the liquefaction circuit heat exchanger (E2), in the same way as in Stockmann et al. and Dubar, where after it is eventually returned to a compressor (V3).

A second branch (3d) is passed through an expander (c) and is then returned to the pre-cooling circuit heat exchanger (E1), before it is conducted back to the second circuit compressor (V3). This arrangement is described in page 12, line 5, through page 14, line 7, of the specification.

One advantage of this arrangement is that the second circuit can contribute to the pre-cooling of the gas stream. A further advantage is that the distribution of cooling capacity of the second circuit can be controlled almost at will. This feature was contained in the last portion of claim 1, which stated “...characterized in that at least one part flow of the refrigerant of the second refrigeration circuit is used for the preliminary cooling of the hydrocarbon-rich flow.” As this wording could be interpreted as comprising the portion (L5) of the second circuit, claim 1 has been amended to make it clear that *at least one part flow of the refrigerant of the second refrigeration circuit is drawn off after providing preliminary cooling and is returned for additional preliminary cooling of the hydrocarbon-rich flow*. Support for this amendment is found at page 12, lines 25-35 and Figures 1, 2 and 4 of the application.

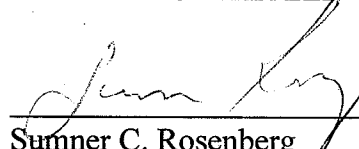
Therefore, it is submitted that claim 1 is not anticipated by either Stockmann et al. or Dubar. Thus, claim 1, as well as dependent claims 2-6 should be allowable. Also, since generic claims 1-6 are allowable, species claims 8 and 9 should be allowed.

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A credit card payment submitted via EFS Web in the amount of \$1,110.00, representing the fee for a large entity under 37 C.F.R. § 1.17(a)(3) and a Request for Three Month Extension of Time are enclosed. This amount is believed to be correct; however, the Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 14-0629.

Respectfully submitted,

BALLARD SPAHR LLP

A handwritten signature in dark ink, appearing to read "Sumner C. Rosenberg", is written over a horizontal line.

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